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2006 SMALL GAME HARVEST SURVEY

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Abstract

A sample of small game license buyers was contacted after the 2006 hunting seasons to estimate the number of people hunting small game, their days afield, and harvest. The survey also was used to investigate hunter satisfaction and to estimate trip expenditures for small game hunting. In 2006, about 208,000 people hunted small game species, an increase of 6% from 2005. Small game hunters most often sought tree squirrels, ruffed grouse, and cottontail rabbits. For most species, the number of hunters and their harvest did not change significantly between 2005 and 2006. The exceptions included fewer people hunting crows (28% decline). Hunting effort statewide also declined significantly among hunters pursuing crows (-40%). In contrast, harvest increased significantly statewide for only tree squirrels (38%) and ruffed grouse (26%). Compared to 2005, an increased proportion of small game hunters in 2006 were satisfied with their overall small game hunting experience (63% versus 56% satisfied). Moreover, an increased proportion of small game hunters were satisfied with the amount of small game seen (44% versus 36%) and small game harvested (36% versus 28%). Small game hunters spent an average of $465 for small game hunting trips in Michigan during 2006. Collectively, small game hunters spent $96.4 million on small game hunting trips in Michigan.

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INTRODUCTION

The Natural Resources Commission and the Michigan Department of Natural Resources (DNR) have the authority and responsibility to protect and manage the wildlife resources of the State of Michigan. This responsibility is shared with the U.S. Fish and Wildlife Service (USFWS) for the management of migratory species such as woodcock (*Scolopax minor*). Harvest surveys are one of the management tools used by the DNR to accomplish its statutory responsibility. Estimates derived from harvest surveys, as well as breeding bird counts, are used to monitor game populations and help establish harvest regulations.

Since the 1950s, the primary small game species harvested in Michigan have been ring-necked pheasant (*Phasianus colchicus*), ruffed grouse (*Bonasa umbellus*), American woodcock, cottontail rabbit (*Sylvilagus floridanus*), snowshoe hare (*Lepus americanus*), tree squirrels (*Sciurus* spp. and *Tamiasciurus hudsonicus*), and American crow (*Corvus brachyrhynchos*) (Frawley 2007). Most of these animals could be harvested during fall and early winter (Table 1) by a person possessing a small game hunting license (includes resident, nonresident, 3-day nonresident, resident junior, and senior small game hunting licenses). Woodcock hunters have been required to register with the National Migratory Bird Harvest Information Program (HIP) since 1995. Landowners and their families that hunted small game on their property where they resided could hunt without a hunting license, although they still needed to register with HIP if they hunted woodcock.

The HIP is a cooperative effort between state wildlife agencies and the USFWS. It was implemented to improve knowledge about harvest of migratory game birds (e.g., woodcock). Beginning in 1995, any person who hunted migratory game birds in Michigan was required to register with HIP and answer several questions about their hunting experience during the previous year. The HIP provided the USFWS with a national registry of migratory bird hunters from which they can select participants for harvest surveys.

Estimating harvest, hunter numbers, and hunting effort were the primary objectives of the small game harvest survey. This survey also provided an opportunity to collect information about management issues. Questions were added to the questionnaire to investigate hunter satisfaction with the 2006 hunting season and small game numbers. In addition, questions were also added to estimate annual small game hunting trip expenditures. Small game hunters were asked for the first time for this 2006 survey whether they pursued coyotes (*Canis latrans*) and the number of coyotes taken.

METHODS

Following the 2006 hunting seasons, a questionnaire was sent to 5,000 randomly selected people that had purchased a small game hunting license. All licensees had an equal chance of being included in the random sample. Up to two follow-up questionnaires were sent to non-respondents. Questionnaires were undeliverable to 139 people, primarily because of changes in residence. Questionnaires were returned by 2,896 of 4,861 people receiving the questionnaire (60% response rate).

Estimates were calculated using a stratified random sampling design (Cochran 1977). After the sample was selected, licensees were grouped into one of four strata on the basis of their residence. Residents of the Upper Peninsula (UP), northern Lower Peninsula (NLP), southern Lower Peninsula (SLP), and nonresidents were grouped into separate strata (Figure 1). Statewide estimates were derived by combining strata estimates so the influence of each stratum matched the frequency its members occurred in the population of hunters. The primary reason for using a stratified sampling design was to produce more precise estimates. Improved precision means similar estimates should be obtained if this survey were to be repeated.

Coyotes could be harvested in Michigan by hunters possessing either a small game hunting (residents) or a fur harvesters license (residents and nonresidents). The DNR sells hunting licenses using a statewide automated license sales system. This system allowed the DNR to maintain a central database containing license sales information (e.g., sales transactions) for each license buyer. Using this database, small game hunting license buyers that also purchased a fur harvesters license were identified, and then coyote harvest was estimated separately for small game licensees with and without a fur harvesters license.

Estimates were calculated along with their 95% confidence limit (CL). In theory, this CL can be added and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval is a measure of the precision associated with the estimate and implies the true value would be within this interval 95 times out of 100. Unfortunately, there are several other possible sources of error in surveys that are probably more serious than theoretical calculations of sampling error. They include failure of participants to provide answers (nonresponse bias), question wording, and question order. It is very difficult to measure these biases. Thus, estimates were not adjusted for possible bias. Furthermore, harvest estimates did not include animals taken legally outside the open season (e.g., nuisance animals) and by unlicensed landowners and their family that legally hunted on their own land.

Statistical tests are used routinely to determine the likelihood the differences among estimates are larger than expected by chance alone. The overlap of 95% confidence intervals was used to determine whether estimates differed. Non-overlapping 95% confidence intervals was equivalent to stating the difference between the means was larger than would be expected 995 out of 1,000 times ($P < 0.005$), if the study had been repeated (Payton et al. 2003).

RESULTS AND DISCUSSION

License sales and hunter participation

In 2006, 295,369 people purchased small game hunting licenses, an increase of about 3% from 2005 (Table 2). About 70% ± 2% of the licensees actually hunted in 2006 (Tables 2 and 3), which was similar to the 68% of licensees that hunted in 2005. An estimated 207,981 people actually hunted small game species in 2006, an increase of about 6% from 2005 (Table 3). About 97% of the active small game hunters were males (Table 3). Hunters most often sought tree squirrels, cottontail rabbits, and ruffed grouse (Table 4). In 2006, the

average age of small game license buyers was 41 years (Figure 2). Nearly 13% (38,246) of the license buyers were younger than 17 years old.

Harvest and hunting trends

Significantly fewer hunters statewide pursued crows (28% decline) in 2006 than during 2005 (Table 4). Hunting effort statewide declined significantly only among hunters pursuing crows (40% decline) between 2005 and 2006 (Table 5). Harvest increased significantly statewide for only squirrels (38% increase) and ruffed grouse (26% increase) between 2005 and 2006 (Table 6).

Coyotes could be harvested in Michigan by hunters possessing either a small game hunting (residents) or a fur harvesters license (residents and nonresidents). In 2006, an estimated 33,182 small game hunters pursued coyotes (Tables 4 and 7). About 32% of these hunters possessed only a small game hunting license (Table 7), and they were responsible for 31% of the coyotes taken by all small game license holders.

The number of small game hunters in Michigan has declined about 70% since the mid-1950s (Figure 3). This trend has been previously reported in Michigan and nationally (Brown et. al. 2000, Enck et al. 2000, Frawley 2006, U.S. Department of the Interior 2002). Hawn (1979) speculated declining ring-necked pheasant populations was the primary reason for declining small game hunter numbers in Michigan. The number of people hunting pheasants has declined by about 90% between the mid-1950s and recent years (Figure 4). Many other factors have contributed to the decline of small game hunting, including increased urbanization of the human population, increased competition between hunting and other leisure activities, and loss of wildlife habitat (Brown et al. 2000).

Declining participation since the mid-1950s also has been noted among hunters pursuing cottontail rabbits (-75%), snowshoe hare (-70%), and squirrels (-60%). Changes in hunter participation and harvest were generally similar.

Changes in the harvest of game species and hunter participation usually track changes in game populations. The number of hunters that pursued pheasants, rabbits, snowshoe hares, and squirrels was near record low levels during recent years (Figure 4). Game population surveys have indicated pheasant, quail, and woodcock populations are currently among their lowest recorded levels since the 1960s (Tuovila et al. 2003, Frawley et al. 2004, Kelley and Rau 2006). The abundance of rabbit, hare, and squirrels was not monitored annually; thus, it was not possible to determine whether harvest and population trends were similar. Michigan's grouse population generally follows a cyclic pattern lasting about 10 years, and the grouse population in 2006 appeared to be near the low in the cycle (Frawley et al. 2004). Hunter numbers and the number of grouse harvested have followed a similar cyclic pattern. The decline in crow hunters and their hunting effort in Michigan may reflect declining crow numbers as a result of the recent emergence of West Nile virus in North America (LaDeau et al. 2007).

Although many small game species are not as abundant today as during previous decades (e.g., pheasant, quail, woodcock), the mean number of animals taken per hunting effort has not paralleled changes in the population (Figure 5). For example, hunting efficiency has been high among hunters despite declining numbers of pheasant and woodcock.

About 36% of the small game hunters in Michigan hunted on private lands only, 18% hunted on public lands only, and 40% hunted on both private and public lands (Table 8). Private lands served as the primary area for hunters pursuing pheasants, quail, cottontail rabbits, crows, and coyotes (Tables 8 and 9), while public lands were most popular among hunters pursuing grouse, woodcock, and snowshoe hares.

Hunter satisfaction

Compared to 2005 (Frawley 2007), an increased proportion of small game hunters in 2006 were satisfied with their overall small game hunting experience (63% versus 56% satisfied) (Table 10). Moreover, an increased proportion of small game hunters were satisfied with the amount of small game seen (44% versus 36%) and small game harvested (36% versus 28%).

Harvest Information Program compliance among woodcock hunters

In 2006, an estimated 83 ± 4% of the Michigan small game hunters that hunted woodcock had registered with HIP. This level was unchanged from the rate of compliance reported in 2005 (Frawley 2007). Hunters registered with HIP were responsible for an estimated 91% of the woodcock taken in 2006 (Table 11). Similarly, registered hunters were responsible for 81% of the woodcock hunting trips.

Small game hunting expenditures

Among small game hunters that participated in 2006, the average hunter devoted 8.5 ± 0.7 hunting trips during the year to hunt small game. The trips included hunts that took place during a single day and hunts that required an overnight stay away from home. All small game hunters combined took 1.3 million small game hunting trips (± 0.1 million trips) in Michigan during 2006. The active hunter spent an average of $465 ± $61 per year on these trips. Expenditures on long trips included the costs of food, travel, and lodging, while short trips may have only included the cost of fuel. Expenditures did not include all expenses associated with hunting. For example, license fees and equipment costs were not necessarily reported in trip costs. Collectively, small game hunters spent $96.4 million (±$13.0 million) on hunting trips primarily to hunt small game in Michigan during 2006.

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Table 1. Small game hunting seasons in Michigan, 2006-2007.

Species, season, and area[a]	Season dates
Ring-necked pheasant	
Upper Peninsula	Oct. 10 – 31
Lower Peninsula (Zone 2)	Oct. 20 – Nov. 14
Lower Peninsula (Zone 3)	Oct. 20 – Nov. 14 and Dec. 1 – Jan. 1
Northern bobwhite quail	
Southern Lower Peninsula	Oct. 20 – Nov. 14
Ruffed grouse	
Statewide	Sept. 15 – Nov. 14 and Dec. 1 – Jan. 1
American woodcock	
Statewide	Sept. 23 – Nov. 6
Cottontail rabbit	
Statewide	Sept. 15 – March 31
Snowshoe hare	
Statewide	Sept. 15 – March 31
Squirrels	
Statewide	Sept. 15 – March 1
American crow	
Upper Peninsula	Aug. 1 – Sept. 30
Lower Peninsula	Aug. 1 – Sept. 30 and Feb. 1 – March 31

[a]See Figure 1 for boundaries of hunt areas.

Table 2. Number of small game hunting licenses sold in Michigan, 2002-2006.

Item	Year					2005-2006 % Change
	2002	2003	2004	2005	2006	
Number of licenses sold[a]	331,381	331,299	311,002	291,948	300,099	3
Number of people buying a hunting license[b]	327,279	327,071	306,526	287,562	295,369	3

[a]The number of licenses sold is higher than the number of people buying licenses because some people purchased multiple licenses.
[b]A person was counted only once, regardless of how many licenses they purchased.

Table 3. Estimated sex and age of active small game hunters in Michigan, 2002-2006.[a]

Variable	2002	2003	2004	2005	2006	
					Estimate	95% CL
Hunters[b]	213,406	212,593	210,455	196,501	207,981	4,891
Males (%)	97.5	97.0	97.1	96.9	97.1	0.7
Females (%)	2.5	3.0	2.9	3.1	2.9	0.7
Age (Years)[c]	41.3	41.7	42.0	43.3	43.2	0.7

[a]Analyses included only those people that hunted.
[b]People that hunted American crow, American woodcock, cottontail rabbit, northern bobwhite quail, ring-necked pheasant, ruffed grouse, snowshoe hare, or tree squirrels.
[c]Mean age on October 1.

Table 4. Estimated number of small game hunters by species and region in Michigan, 2003-2006.[a]

Species and region	2003	2004	2005	2006 No.	2006 95% CL	2005-06 % Change
Ring-necked pheasant[b]						
UP	2,058	1,454	1,352	3,004	1,001	122*
NLP	21,330	20,865	21,386	19,691	2,566	-8
SLP	39,236	38,859	36,014	36,964	3,482	3
Statewide	59,145	57,373	55,590	56,192	4,207	1
Northern bobwhite quail						
NLP	742	556	649	256	277	-61
SLP	1,983	1,562	2,964	2,462	883	-17
Statewide	2,685	2,117	3,264	2,718	1,035	-17
Ruffed grouse						
UP	43,913	39,526	35,516	38,221	2,800	8
NLP	53,666	52,828	51,082	47,647	3,721	-7
SLP	13,729	11,880	13,658	14,199	2,273	4
Statewide	103,279	96,117	92,428	92,698	4,644	0
American woodcock						
UP	12,263	12,531	12,286	11,544	1,944	-6
NLP	26,522	28,249	27,158	23,254	2,779	-14
SLP	8,446	7,867	7,715	8,014	1,738	4
Statewide	43,270	44,525	43,286	39,618	3,605	-8
Cottontail rabbit						
UP	4,244	4,884	4,869	3,941	1,141	-19
NLP	30,726	31,617	30,476	28,247	2,904	-7
SLP	67,022	68,966	62,725	64,005	4,188	2
Statewide	95,758	99,503	91,525	89,703	4,866	-2
Snowshoe hare						
UP	10,192	10,468	11,392	10,243	1,808	-10
NLP	10,322	11,940	11,033	11,976	1,977	9
SLP	1,289	1,289	1,554	2,322	927	49
Statewide	21,137	22,949	23,277	23,566	2,818	1
Squirrels						
UP	5,582	6,114	5,210	4,305	1,201	-17
NLP	43,795	39,457	38,602	41,965	3,448	9
SLP	59,833	58,243	53,288	58,476	4,053	10
Statewide	101,141	97,427	90,324	98,373	4,979	9
American crows						
UP	1,304	1,816	1,293	1,283	666	-1
NLP	6,321	6,532	7,471	4,582	1,259	-39*
SLP	8,886	9,953	10,858	8,558	1,799	-21
Statewide	15,743	17,703	19,021	13,699	2,258	-28*
Coyote						
UP	NA	NA	NA	4,557	1,235	NA
NLP	NA	NA	NA	14,709	2,191	NA
SLP	NA	NA	NA	16,794	2,435	NA
Statewide	NA	NA	NA	33,182	3,381	NA

[a]The number of hunters does not add up to the statewide total because hunters can hunt in more than one region.
[b]Included both regular and late pheasant hunting seasons.
*Non-overlapping 95% confidence intervals indicated estimates differed significantly (P<0.005).

Table 5. Estimated amount of small game hunter effort (days afield) by species and region, 2003-2006.

Species and region	2003	2004	2005	2006 No.	2006 95% CL	2005-06 % Change
Ring-necked pheasant[a]						
UP	10,709	7,034	6,956	17,728	10,730	155
NLP	75,451	86,561	87,349	73,670	17,037	-16
SLP	158,569	175,842	170,933	149,123	23,148	-13
Statewide	244,729	269,437	265,238	240,521	32,500	-9
Northern bobwhite quail						
NLP	2,140	1,700	3,658	970	1,106	-73
SLP	8,802	5,145	9,466	8,172	5,672	-14
Statewide	10,942	6,845	13,124	9,142	6,207	-30
Ruffed grouse						
UP	399,926	411,602	298,039	273,177	43,669	-8
NLP	326,222	332,652	291,457	302,392	43,157	4
SLP	79,709	65,337	63,366	72,545	25,548	14
Statewide	805,857	809,591	652,861	648,114	67,613	-1
American woodcock						
UP	81,133	106,482	76,952	60,543	15,304	-21
NLP	172,575	172,731	146,969	139,342	27,735	-5
SLP	47,334	36,521	36,886	38,933	13,856	6
Statewide	301,043	315,734	260,807	238,819	36,250	-8
Cottontail rabbit						
UP	27,346	43,963	37,053	20,713	10,386	-44
NLP	192,501	236,673	176,525	146,278	31,194	-17
SLP	488,554	502,642	408,930	457,310	81,457	12
Statewide	708,401	783,277	622,508	624,301	90,704	0
Snowshoe hare						
UP	66,290	82,961	86,254	51,238	13,928	-41*
NLP	64,906	88,711	53,472	72,704	24,501	36
SLP	9,124	6,479	7,776	12,828	9,458	65
Statewide	140,320	178,151	147,502	136,769	35,067	-7
Squirrels						
UP	52,151	59,363	31,883	47,745	40,796	50
NLP	292,974	273,883	217,342	324,200	78,858	49*
SLP	402,981	378,893	321,882	357,930	66,726	11
Statewide	748,107	712,139	571,106	729,875	117,341	28
American crow						
UP	7,228	10,266	8,581	4,574	3,445	-47
NLP	47,419	33,664	28,820	13,388	5,987	-54*
SLP	45,776	69,872	42,323	30,139	11,061	-29
Statewide	100,423	113,802	79,724	48,101	13,423	-40*
Coyote						
UP	NA	NA	NA	131,284	151,542	NA
NLP	NA	NA	NA	66,657	18,131	NA
SLP	NA	NA	NA	118,940	56,133	NA
Statewide	NA	NA	NA	316,881	163,555	NA

[a]Included both regular and late pheasant hunting seasons.
*Non-overlapping 95% confidence intervals indicated estimates differed significantly (P<0.005).

Table 6. Estimated small game harvest by species and region in Michigan, 2003-2006.

Species and region	2003	2004	2005	2006 No.	2006 95% CL	2005-05 % Change
Ring-necked pheasant[a]						
UP	6,289	1,208	2,111	7,841	4,617	271
NLP	43,044	35,603	35,560	29,214	8,834	-18
SLP	86,829	64,647	56,346	57,703	11,864	2
Statewide	136,162	101,458	94,017	94,758	16,486	1
Northern bobwhite quail						
NLP	689	227	577	0	0	-100*
SLP	1,672	2,737	2,980	3,212	2,684	8
Statewide	2,361	2,964	3,557	3,212	2,863	-10
Ruffed grouse						
UP	211,514	119,183	105,564	154,473	24,464	46*
NLP	126,846	90,028	94,109	101,793	18,414	8
SLP	19,967	16,720	15,625	14,568	5,107	-7
Statewide	358,326	225,930	215,298	270,834	31,800	26*
American woodcock						
UP	37,290	26,556	37,743	40,167	13,890	6
NLP	83,047	71,219	67,168	70,748	20,042	5
SLP	18,894	18,898	16,525	23,221	13,309	41
Statewide	139,231	116,673	121,437	134,136	29,096	10
Cottontail rabbit						
UP	9,697	17,227	9,206	7,438	4,312	-19
NLP	123,705	101,699	76,337	74,707	17,004	-2
SLP	412,205	393,882	334,276	358,970	57,569	7
Statewide	545,607	512,808	419,820	441,116	60,874	5
Snowshoe hare						
UP	40,121	22,907	28,339	44,258	4,964	56*
NLP	25,344	19,100	14,904	15,570	3,591	4
SLP	3,258	1,587	2,790	5,955	24,705	113
Statewide	68,723	43,594	46,033	65,783	18,719	43
Squirrels						
UP	49,062	36,271	32,352	38,012	24,705	17
NLP	289,581	209,168	195,545	311,378	123,495	59
SLP	376,294	329,735	285,000	359,526	47,802	26
Statewide	714,937	575,174	512,898	708,917	135,071	38*
American crow						
UP	9,668	5,144	6,271	4,258	3,126	-32
NLP	27,341	20,714	46,955	39,827	46,182	-15
SLP	42,603	60,906	55,839	28,240	13,018	-49
Statewide	79,612	86,764	109,066	72,325	48,578	-34
Coyote						
UP	NA	NA	NA	3,869	3,444	NA
NLP	NA	NA	NA	9,762	4,001	NA
SLP	NA	NA	NA	19,599	9,081	NA
Statewide	NA	NA	NA	33,231	10,653	NA

[a]Included both regular and late pheasant hunting seasons.

*Non-overlapping 95% confidence intervals indicated estimates differed significantly (P<0.005).

Table 7. Estimated number of coyote hunters, coyotes harvested, and hunting effort (days afield) by small game hunters with and without a fur harvesters license in Michigan, 2006.[a]

	Hunters		Days afield		Harvest	
Small game hunter group	No.	95% CL	No.	95% CL	No.	95% CL
With fur harvesters license	22,492	2,844	218,750	154,838	14,050	6,243
Without fur harvesters license	10,690	1,991	98,131	53,217	19,181	8,672
Combined	33,182	3,381	316,881	163,555	33,231	10,653

[a]Coyotes can also be taken by hunters possessing either a small game hunting or a fur harvesters license. These estimates do not include people with only a fur harvesters license that hunted coyotes.

Table 8. Estimated number and proportion of hunters hunting on private and public lands during the 2006 small game hunting season, summarized by species.

	Land type															
	Private land only				Public land only				Both private and public lands				Unknown land			
Species	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL
Ring-necked pheasant	36,477	3,538	65	4	7,250	1,671	13	3	10,538	1,992	19	3	1,926	861	3	2
Northern bobwhite quail	1,487	773	55	19	629	501	23	16	508	444	19	15	93	182	3	7
Ruffed grouse	19,128	2,614	21	3	32,488	3,316	35	3	36,319	3,259	39	3	4,762	1,330	5	1
American woodcock	5,646	1,461	14	3	16,032	2,402	40	5	13,775	2,229	35	5	4,166	1,262	11	3
Cottontail rabbit	50,511	4,011	56	3	11,798	2,106	13	2	23,491	2,900	26	3	3,903	1,229	4	1
Snowshoe hare	3,951	1,211	17	5	9,043	1,821	38	6	8,034	1,693	34	6	2,537	967	11	4
Squirrels	43,785	3,807	45	3	23,497	2,898	24	3	25,492	3,007	26	3	5,600	1,460	6	1
American crow	8,297	1,776	61	8	2,048	892	15	6	2,431	966	18	6	923	601	7	4
Coyote	19,797	2,691	60	5	4,551	1,315	14	4	7,816	1,692	24	5	1,018	628	3	2
Combined	74,110	4,631	36	2	38,019	3,580	18	2	83,685	4,740	40	2	12,168	2,126	6	1

Table 9. Estimated number of days of hunting effort on private and public lands during the 2006 small game hunting season in Michigan, summarized by species.[a]

	Land type							
	Private lands		Public lands		Both private and public lands		Unknown	
Species	Total	95% CL	Total	95% CL	Total	95% CL	Total	95% CL
Ring-necked pheasant	142,392	21,628	41,286	13,447	49,137	17,455	7,707	5,816
Northern bobwhite quail	4,232	2,705	4,243	5,389	574	935	93	182
Ruffed grouse	96,367	20,313	259,552	42,588	264,987	48,323	27,208	11,689
American woodcock	31,745	12,160	107,903	26,512	72,341	17,456	26,829	12,015
Cottontail rabbit	300,277	58,179	91,658	27,563	204,789	60,694	27,577	14,635
Snowshoe hare	16,201	8,022	49,231	19,253	56,651	22,249	14,686	17,024
Squirrels	285,539	71,758	162,545	31,185	233,543	80,533	48,249	37,717
American crow	27,987	9,704	8,860	5,615	8,649	5,480	2,606	2,543
Coyote	182,256	118,499	76,798	109,552	52,595	21,510	5,233	4,844

[a]People that hunted small game on both private and public lands were not asked to record the amount of effort separately for each land type; thus, it was not possible to estimate the total amount or proportion of effort devoted to either private or public lands separately.

Table 10. Level of satisfaction among active small game hunters (% of hunters) with the 2006 small game hunting season in Michigan.[a]

	Level of satisfaction									
	Very satisfied		Somewhat satisfied		Neutral		Somewhat dissatisfied		Very dissatisfied	
Index used to measure season satisfaction	%	95% CL	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Small game seen	15	2	29	2	19	2	22	2	15	2
Small game harvested	11	1	24	2	26	2	21	2	17	2
Length of season	33	2	27	2	29	2	8	1	3	1
Overall experience	30	2	33	2	20	2	11	1	6	1

[a]Analyses limited to small game license buyers that actually hunted in 2006 and indicated a level of satisfaction.

Table 11. Estimated number of Michigan woodcock hunters, woodcock harvested, and hunting effort (days afield) among people that registered with the Harvest Information Program, 2006.[a]

Variable	No.	95% CL
Hunters	32,864	3,323
Days afield (effort)	194,119	32,723
Harvest	121,759	28,541

[a]Analyses limited to people that registered with HIP and hunted woodcock.

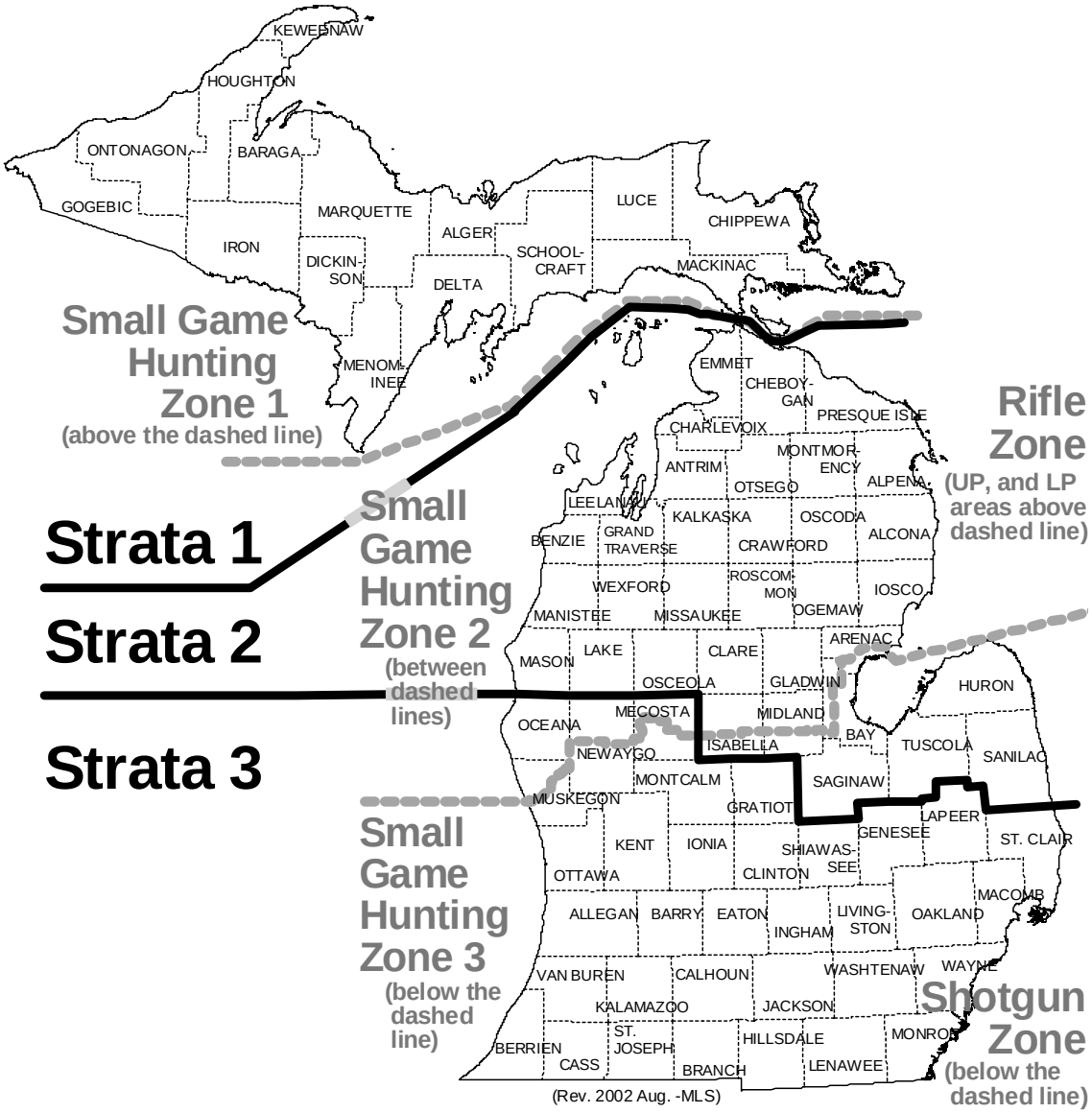

Figure 1. Areas (strata) used to summarize the survey data (top). Stratum boundaries did not match the small game management hunting zones.

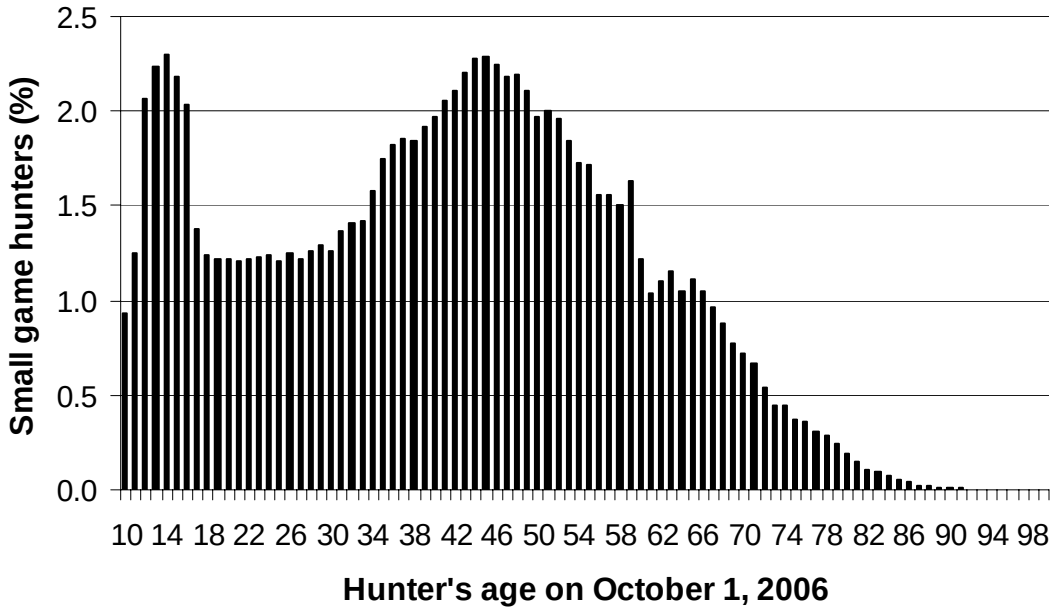

Figure 2. Age of people that purchased a small game hunting license in Michigan for the 2006 hunting seasons ($\bar{x}$ = 41 years).

Figure 3. Estimated number of small game hunters in Michigan, 1954-2006 (estimate of the number of people that went afield). No estimate was available for 1984.

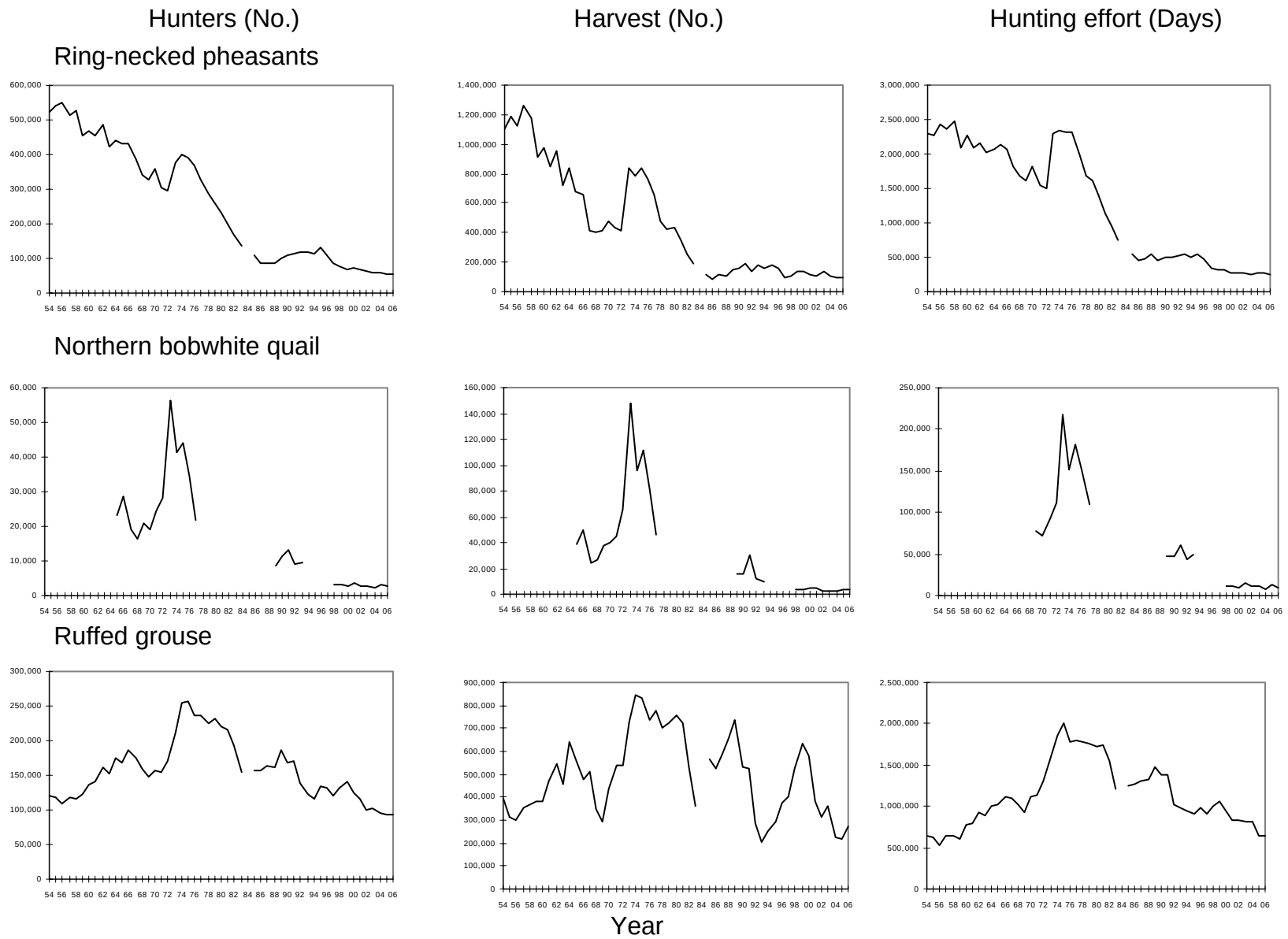

Figure 4. Estimated number of hunters, harvest, and hunting effort in Michigan during the small game hunting seasons, 1954-2006. No estimates were available or no seasons existed during years when no data are plotted.

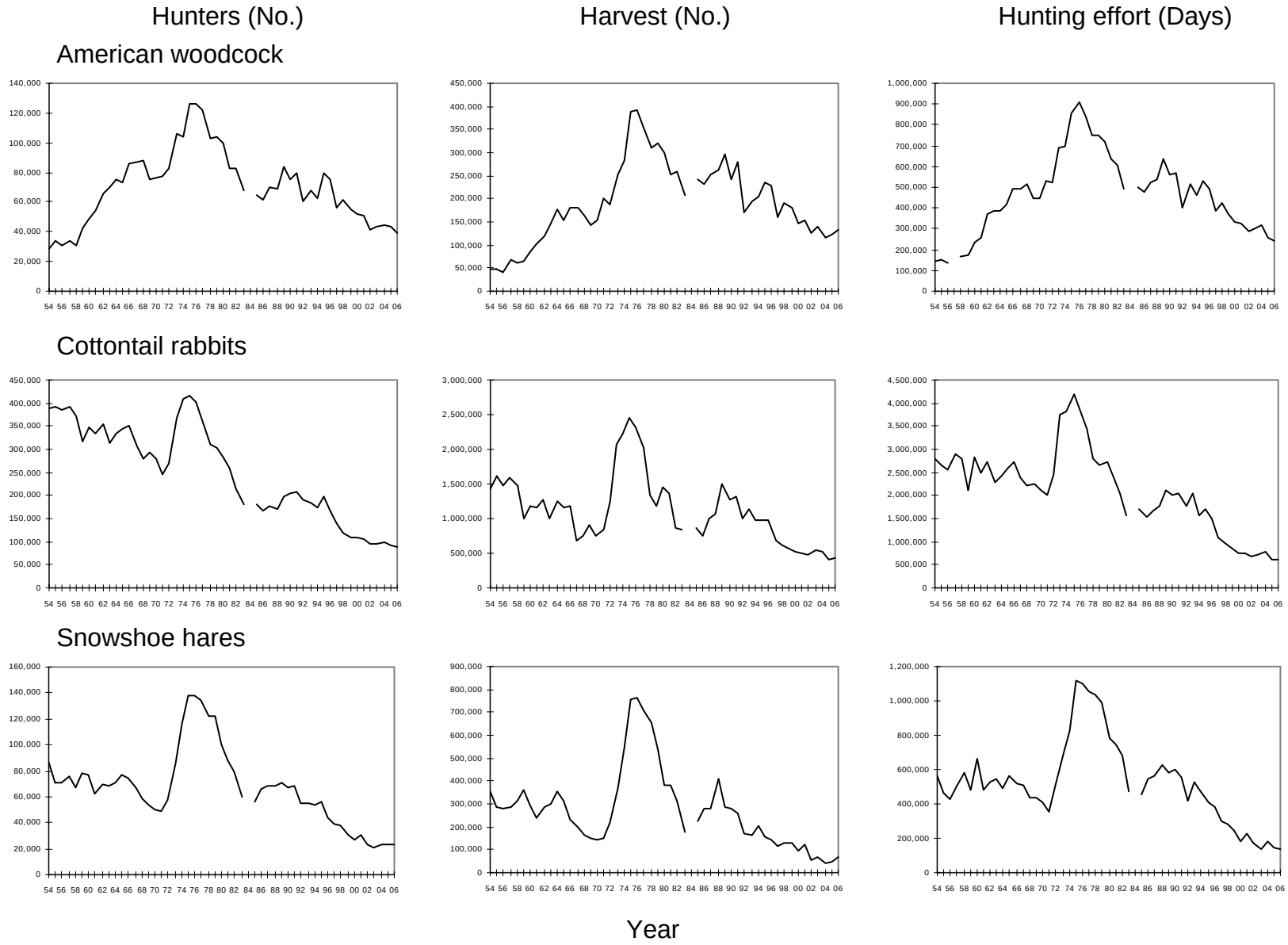

Figure 4 (continued). Estimated number of hunters, harvest, and hunting effort in Michigan during the small game hunting seasons, 1954-2006. No estimates were available or no seasons existed during years when no data are plotted.

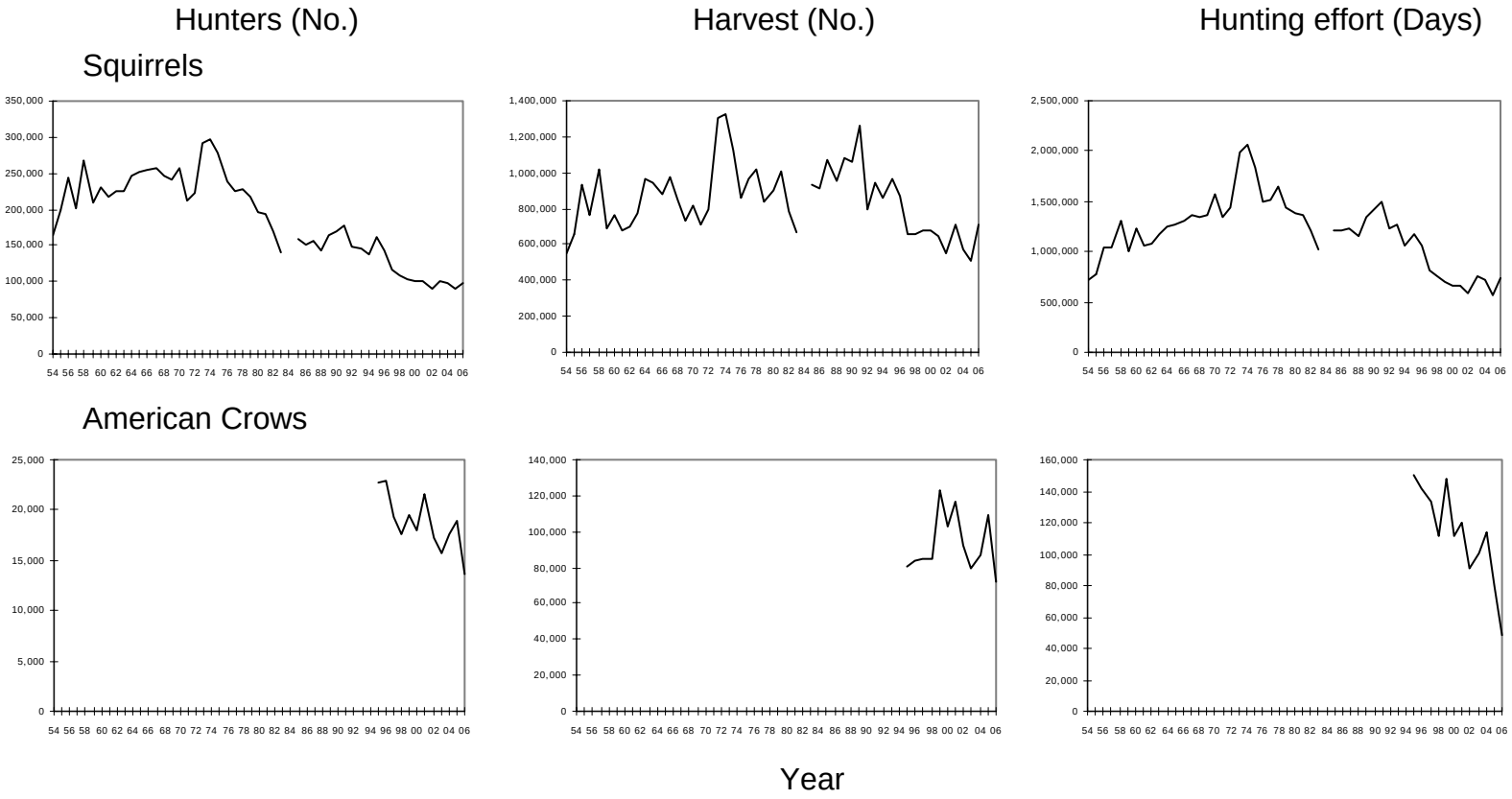

Figure 4. (continued) Estimated number of hunters, harvest, and hunting effort in Michigan during the small game hunting seasons, 1954-2006. No estimates were available or no seasons existed during years when no data are plotted.

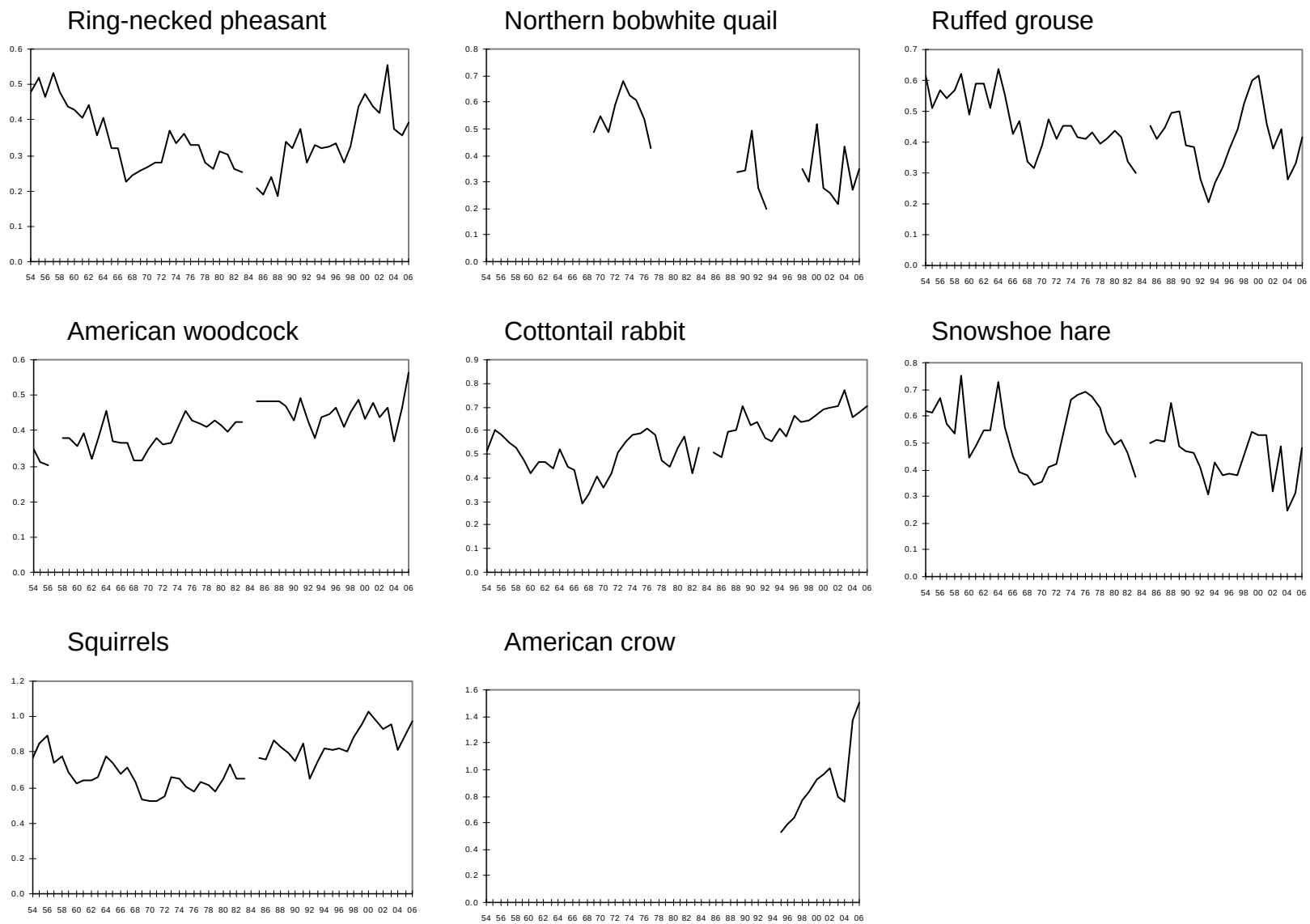

Figure 5. Estimated harvest per effort in Michigan during the small game hunting seasons, 1954-2006. No estimates were available or no seasons existed during years when no data are plotted.